



THE STATE
of **ALASKA**

GOVERNOR MICHAEL J. DUNLEAVY

Department of Natural Resources

DIVISION OF OIL AND GAS

550 W. 7th Avenue Suite 1100
Anchorage, Alaska 99501-3560
Main: 907.269.8800
Fax: 907.269.8939

December 28, 2020

Pat Galvin
Chief Commercial Officer
Great Bear Pantheon LLC
3705 Arctic Blvd Suite 2324
Anchorage, Alaska, 99503

**RE: LONS 20-002, Great Bear Pantheon LLC, Talitha Unit, Talitha A Drilling Program
Plan of Operations Decision Exploration Phase.**

Dear Mr. Galvin:

I. INTRODUCTION

On October 7, 2020, Great Bear Pantheon LLC (Great Bear) submitted a request to the Division of Oil and Gas (Division) for approval of a Unit Plan of Operations (Plan) to carry out the Talitha A Exploration Drilling Program (Talitha A) in the Talitha Unit (TAU). Talitha A is approximately eight miles west of Dalton Highway Milepost 386.7. Approval of this Plan, along with approvals from other state and federal agencies (Agencies), is necessary for Great Bear to carry out the project. Any further exploration is subject to additional review and approval by the Department of Natural Resources (DNR).

II. SCOPE OF DECISION

The DNR Commissioner has delegated authority for approval of Unit Plan of Operations activities to the Division under Department Order: 003 in accordance with Alaska Statute (AS) 38.05 and 11 Alaska Administrative Code (AAC) 83.346. As set forth below, the Division has evaluated the proposed Plan to determine if sufficient information, as required by 11 AAC 83.346, is provided. The Division has also considered criteria set forth in 11 AAC 83.303. In approving a Plan, the Division may require amendments it determines are necessary to protect the State's interests (11 AAC 83.346(e)).

The Plan proposes to drill one exploration oil well, Talitha A, on oil and gas lease ADL 391658 in the TAU, located eight miles west of Dalton Highway Milepost 386.7. Eight miles of ice roads and an ice pad measuring approximately 500 feet long and 230 feet wide will be constructed. All operations will be conducted on the ice pad. Facilities used for the operation will include a satellite office camp, storage areas, and maintenance buildings. Primary drilling objectives include testing and evaluating multiple targets in the Brookian and Kuparuk formations. All facilities will be temporary.

The following Plan elements require authorization from other agencies:

Agency	Permit Type
Alaska Oil and Gas Conservation Commission (AOGCC)	Permit to Drill
Alaska Department of Fish and Game (ADF&G)	Title 16 Fish Habitat Public Safety Permit
Alaska Department of Environmental Conservation (ADEC)	Oil Discharge Prevention & Contingency Plan (C-Plan) Amendment Minor General Permit MG1 Temporary Storage of Drilling Waste Plan Temporary Storage of Non- Drilling Waste Plan
DNR Division of Mining, Land and Water (DMLW)	Temporary Water Use Authorizations Land Use Permit-Ice Roads Land Use Permit-Tundra Travel
Alaska Department of Transportation (DOT)	Driveway Permit
North Slope Borough (NSB)	Development Permit

III. LAND STATUS

The project area comprises state lands.

- A. Division's Leased Lands: This section refers to Division managed oil and gas leases regardless of ownership of overlying surface lands.

Oil and Gas Lease: ADL 391658

Oil and Gas Mineral Estate Lessee(s): Great Bear Petroleum Ventures II LLC and Borealis Alaska LLC

Surface Ownership and Access Agreement: State of Alaska

Special Use Lands: ADL 50666

Jointly Managed Lands: None

Other Considerations: N/A

Project Components	Meridian, Township, Range, & Section(s)	GPS Coordinates
Talitha A Well and Ice Pad	Umiat, T005N, R012E, Sec 03	69°49'23.11" N, -149°5'25.90W

IV. PROPOSED OPERATIONS

The Plan describes the proposed operations in full detail. Set forth below is a summary of the key details.

A. Sequence and Schedule of Events

Project Milestone #	Project Milestone	Proposed Start Date	Proposed End Date
1.	Pre-pack then construct ice road and Ice Drillpad	12/15/2020	1/15/2021
2.	Move rig in and rig up	1/15/2021	1/25/2021
3.	Talitha A well spudded	1/25/2021	1/25/2021
4.	Talitha A well drilled, cased, tested, and suspended	1/25/2021	4/15/2021
5.	Rig down and move out	4/15/2021	4/30/2021
6.	Clean up site (winter)	4/28/2021	4/30/2021
7.	Clean up site (summer stick picking)	6/30/2021	7/2/2021

Great Bear proposed the above schedule for the proposed operations. All dates are approximate and may be altered by weather or logistic requirements. The schedule provides the Division with an overall idea of the sequence and schedule of the events.

B. Well Sites

Using Nordic-Calista Rig #3, the Talitha A exploration well will be drilled to an approximate depth of 10,200 feet to test and evaluate multiple targets in the Brookian and Kuparuk formations. The well will be logged, cased, and likely fracture-stimulated as the most prospective interval encountered. A prospective lateral interval may be drilled, if possible. The well will be designed and permitted to abide by AOGCC regulations. Its use will follow Great Bear's well control plan, which includes various safety and emergency measures to ensure safe operation through the winter and following months. All operations will be conducted on the ice pad.

C. Buildings

Great Bear plans to build an ice pad measuring approximately 500 feet in length and 230 feet in width that will house the drill rig and temporary support facilities. Facilities used for the operation will include a satellite office camp, storage areas, and maintenance buildings.

D. Fuel and Hazardous Substances

Fuel will be stored on the drilling pads and possibly at emergency shelters (if used). Fuel storage tanks will include secondary containment that will hold a minimum of 110 % of the single largest tank or any group of tanks permanently joined together. Fuel storage, handling, transfers, and spill reporting will be conducted in accordance with the regulatory requirements as described in the Great Bear Exploration Project C-Plan #16-CP-5191, North Slope Environmental Field Handbook, and Alaska Safety Handbook, and in accordance with the 2008 North Slope Mitigation Measures with the 2011 supplemental. All bulk fuel and fluid transfers in excess of

500 gallons will be monitored by an Alaska Clean Seas (ACS) spill technician. The size of the day tank on the rig may vary, but it will be less than a 10,000-gallon capacity. The maximum amount of fuel stored at a drill site will be 9,000 gallons. All fuel and hazardous materials stored at the drill site will be kept more than 100 feet from a waterbody. Drip pans will be placed under vehicles and equipment capable of leaking hazardous fluid. No vehicle refueling will take place in an active river floodplain. All independent fuel and hazardous substance containers will be marked with the contents and the lessee's or contractor's name using paint or a permanent label.

E. Solid Waste Sites

All waste disposal procedures will conform to local, state, and federal requirements. The general approach to waste management will be to temporarily store wastes and periodically haul waste materials to existing North Slope facilities for proper treatment and disposal. Solid, non-burnable waste will be deposited in dumpsters located at each site. These containers will be hauled to the NSB landfill at Prudhoe Bay. The food waste that could attract wildlife will be stored in enclosed containers pending periodic hauling, or hauled each day to an approved disposal facility in PBU. All solid, burnable waste may be incinerated on-site to reduce the amount of trash that must be hauled from the drilling location, in accordance with 18 AAC 50. The ash will be hauled to the NSB landfill. Camp wastewater will be hauled to an approved disposal facility on the North Slope. The satellite office camp should generate less than 500 gallons per day of domestic wastewater. Drill cuttings will be promptly trucked to an approved grind and inject (G&I) facility when generated. Waste drilling fluids and produced reservoir fluids will be processed on-site for reuse where possible or trucked to an approved facility for injection in Prudhoe Bay. Used oil will be recycled or packaged in drums and hauled to Prudhoe Bay for shipment to an approved recycle facility. A metal temporary drill cuttings storage container will be located on the pad to facilitate backhaul operations and continuity of off-site annular injection, if permitted by AOGCC. Wastewater will be stored in tanks until taken to the Prudhoe Bay Unit (PBU) G&I facility for disposal. The wastewater will be removed frequently to prevent build-up at the site location. The PBU G&I is a Class II facility. The majority of wastewater will be sent there for disposal. A small amount of Class I wastewater will be sent to a facility at Prudhoe Bay Pad 3 for reinjection. Cuttings will be immediately hauled to G&I for disposal when generated. After the removal of drilling waste from the storage area, a visual site inspection will be performed to verify that all drilling waste has been removed. A final site inspection report, including drilling waste volume and final disposition of waste, will be submitted to ADEC within seven days of the site inspection, as required under 18 AAC 60.430. All drilling waste will be disposed of prior to completion of winter operations.

F. Water Supplies

Potable water will be obtained from service providers in Deadhorse. The remaining water will be obtained from permitted waterbodies near the ice road route or the drill site. Great Bear will withdraw water from permitted sources to be used for ice road and pad construction, operation, and maintenance, drilling, and camp operations. Great Bear has obtained Temporary Water Use Authorizations for some of the intended water sources, and will acquire permits for additional sources, as necessary. Great Bear anticipates using approximately 8,000,000 gallons of water for ice road construction, 1,000,000 gallons of water for ice pad construction, and 500,000 gallons of water during drilling.

G. Utilities

Utilities will not be located on the ice pads. All operations will be self-contained and powered by generators. Twenty-four-hour phone service and internet will be available at the site. Operational radio communications will be provided using fixed base stations and truck-mounted, mobile “bread-board” radios. Operational frequencies will be coordinated between the various Great Bear field supervisors, ice road and support contractors, and well service providers. Small communications towers will be placed at the site. All communication towers are temporary and will be removed at demobilization.

H. Material Sites

N/A. All activities will occur on ice roads and ice pads.

I. Roads

Approximately eight miles of ice road connected to the Dalton Highway at Milepost 386.7 will be constructed to access the Talitha A site. The ice road will be approximately 35 feet wide and will have a minimum of 0.5 feet of ice cover over the tundra. Standard methods will be used to minimize impacts to vegetation, such as filling in small streambeds with extra snow for additional insulation. The routes will be surveyed to ensure that the approved route is followed during construction activities. Some minor re-routes may be required depending on site-specific conditions at the time of construction. Great Bear will place thermistor strings along ice road routes and at proposed ice pad locations to monitor ground temperatures. Ice roads will be constructed using a combination of existing snow along the route, water, and ice chips from approved water sources. Ice construction activities, including any pre-packing, will be performed in accordance with DNR approvals. Additional water and ice from permitted sources will be used to maintain ice roads in good condition throughout the winter drilling season.

J. Airstrips

N/A. No airstrips will be required.

K. All Other Facilities and Equipment

In the event of a serious emergency, resources would be mobilized from Deadhorse. Medical evacuation, if necessary, would be provided to the clinic in Deadhorse for patient stabilization and/or transfer to Fairbanks or Anchorage hospital facilities.

L. Rehabilitation Plan

Upon completion of drilling and evaluation operations, wells will either be plugged and abandoned or suspended in accordance with AOGCC regulations. All equipment will be demobilized and removed from the pad, and site closure activities will take place. As part of site closure activities, any remaining debris will be hauled to an approved disposal site in the North Slope. Any spills discovered as part of site closure activities, or ice pads and roads with contaminated ice or snow, will be chipped or scraped to remove the contaminated material. This material will be transported to an appropriate facility for disposal.

Once all the equipment is removed from the pad, Great Bear will commence cleanup, rehabilitation, and remediation activities, estimated to take approximately three days. Additional cleanup operations such as stick-picking will be conducted the summer after the winter drilling program to remove any remaining debris not identified and removed during demobilization activities and to identify any issues not discovered during the winter drilling program. Stick-picking is expected to be completed within a day or two. Agency personnel will conduct site visits to verify that cleanup operations are completed and that any issues identified are addressed. In the event that tundra damage is discovered at any point during the winter drilling program or during summer cleanup operations, Great Bear will notify DNR within 72 hours of discovery and NSB within 24 hours of discovery, in accordance with permit requirements. Reports of tundra damage will include the date, time, and location of damage, the size of the impacted area, and cause of damage. Great Bear will coordinate with DNR to identify the level of tundra damage and develop a plan for restoration, rehabilitation, and monitoring. The plan will address the area, type, and extent of damage and will be developed in accordance with the Alaska Coastal Revegetation & Erosion Control Guide developed by the State of Alaska Plant Materials Center, the Streambank Revegetation and Protection Guide developed by the Alaska Department of Fish and Game, and other relevant guidance documents.

M. Operating Procedures Designed to Minimize Adverse Effects

Fish and Wildlife Habitats:

The Talitha A well will be drilled in winter months during the open winter tundra travel with access provided by ice road and ice pad to minimize any impacts to fish and wildlife habitats. Streams will be crossed in shallow waters that normally freeze to bottom or will be bridged using temporary ice ramps and abutments. Great Bear has proposed to locate its operations in a previously disturbed, active industrial corridor to minimize impacts to subsistence users and to important wildlife habitat. A bear avoidance, interaction, mitigation, and monitoring plan has been prepared and will be included in the site orientation for all project personnel.

Historic and Archeological Sites:

The area impacted by this project, as well as the general Great Bear project area, was studied in the summer of 2011 and subsequently pre-cleared through the SHPO and NSB Cultural Resources Department for potential historic and archeological sites during permitting for seismic acquisition projects in 2012-2016. These studies included the areas that will be part of the Talitha project area. The records review included the Alaska Heritage Resources Survey (AHRS) database, maintained by the Office of History and Archaeology within DNR; and the Traditional Land Use Inventory (TLUI) database. No sites were identified in the studies that indicate that the Talitha A well project will impact cultural, historical, or archaeological resources.

Training Programs:

Great Bear and all contractor and subcontractor personnel will receive an HSE orientation. Additionally, the training program will be designed to inform each individual of the environmental, social, and cultural concerns that relate to their job functions. Training components will include permit stipulations and requirements, cultural awareness, spill prevention and reporting, wildlife interaction, and site-specific safety.

Public Use Areas:

Public use of the area is limited to local subsistence activities. Great Bear representatives will be on-site during operations to minimize impacts to subsistence activities. Great Bear will contact all lessees and permittees, if applicable, before entering their surface lands and gain approval through letters of non-objection. Access to the ice roads and ice pads will be restricted to the general public.

Other Uses:

Other uses in the general area will be possible activities by other oil and gas companies or contractors. Great Bear has identified Alyeska Pipeline Service Company (Alyeska) as a company that will be operating in the general area. Great Bear will obtain a letter of non-objection from Alyeska.

In approving a Plan, DNR may require amendments necessary to protect the State's interest (11 AAC 83.346). The Division has determined that to protect the State's interest, it is necessary to incorporate the 2008 North Slope Mitigation Measures. Great Bear addressed these mitigation measures in the application process, but it is necessary to amend the Plan to make clear that the Plan incorporates the 2008 North Slope Mitigation Measures Mitigation Measures.

All plan applicants must complete a mitigation measure analysis form demonstrating that each mitigation measure is satisfied or inapplicable to the proposed Plan, or that the applicant is seeking an exception. The 2008 North Slope Mitigation Measures allow for the Division to grant an exception if the applicant shows that compliance with the measure is not practicable or that the applicant will undertake an equal or better alternative to satisfy the intent of the mitigation measure. Great Bear completed the mitigation measure analysis for the North Slope areawide and no exception(s) were requested.

The Division has determined that to protect the State's interest, it is necessary to incorporate the North Slope Mitigation Measures as amendments and stipulations to this Plan (11 AAC 83.346(e)).

N. Phased Evaluation

The Plan addresses exploration activities for Talitha A, but based on the results of this exploration, the Division anticipates that Great Bear may submit Plans for additional exploration wells. Thus, in considering the exploration phase, the Division considered both the specific activities proposed under this Plan as well as typical exploration activities that Great Bear might propose for further exploring the TAU.

The Division considered the potential impacts of exploration on public and State interests. In the oil and gas context, the public interest includes maximizing economic and physical recovery of oil and gas resources (AS 38.05.180(a)(1)). The State has an interest in protecting the public interest, and in encouraging assessment of oil and gas resources while minimizing the adverse impacts of exploration, development, production, and transportation activities (AS 38.05.180(a)(2)).

In considering potential impacts, the Division also considered the operating procedures Great Bear has designed to minimize adverse effects of the Plan activities. These operating procedures include

complying with the mitigation measures attached to the leases. These measures come from the North Slope Areawide Best Interest Finding (BIF) to address potentially negative effects of oil and gas exploration on fish and wildlife species, habitats and their uses, subsistence uses and local communities. Great Bear has provided a mitigation measure analysis, which is required as part of their Plan submittal.

i. Facilities impacts on the project area:

All facilities will be temporary and have been designed to meet federal and state requirements as well as those of the NSB. The proposed facilities will all be placed on ice pads and there will no new gravel placement to support the Plan. Demobilization of the facilities is proposed to begin on March 15, 2021, and will be in accordance with the 2008 North Slope Mitigation Measure A.1.j.

ii. Fuel and hazardous substances potential impacts on the project area:

The exploratory drilling proposed under the Plan, as well as other exploratory drilling Great Bear might propose during the exploration phase, will result in drilling muds, cuttings, and produced water and pose some risk of a spill. Discharges of drilling muds, cuttings, and produced waters; oil spills; and accidental spills of fuel, lubricants, or chemicals can all have impacts to water, wildlife, and habitats during this exploration program. Impacts from exploration activities, from either disposal activities or a spill, could adversely affect water quality, but impacts are expected to be local and temporary because of dilution, settling, and other natural altering and regenerative processes.

Drilling and Produced Water:

Byproducts of drilling activities include muds and cuttings, produced water, and associated wastes. Produced water contains naturally occurring substances such as clay, sand, oil, and water, and gas. Most drilling wastes are disposed of under ADEC's solid waste disposal program and re-injection is the preferred method for disposal of drilling fluid. Most oil field wastes are considered non-hazardous and waste fluids are recycled, filtered, and treated before re-injection or disposal. Cuttings and waste fluids must be made non-hazardous before injection. Produced water is treated using heat, gravity settling, and gas flotation devices to remove hydrocarbons. After treatment, produced water is re-injected into either the oil-bearing formation to maintain pressure and enhance recovery or into an approved disposal well. Cuttings disposal is done through grinding and injecting on-site, or cuttings are transported to an approved disposal site. Wastewater, including sanitary and domestic graywater, is also treated to meet effluent guidelines before discharge.

During exploration drilling, muds and cuttings are stored on-site, in holding tanks, or in a temporary storage area and then hauled to an approved solid waste disposal site or re-injected into the subsurface at an approved injection well. All production muds and cuttings on the North Slope are re-injected into a Class II injection well. All produced waters are re-injected either into the producing formation or into an injection well. AOGCC oversees proper and safe handling and disposal of drilling wastes and oversees the underground operation of the Alaska oil industry on private and public lands and waters. AOGCC also administers the Underground Injection Control Program (UIC) for oil and gas wells, acts to prevent waste of oil and gas resources and ensure maximum recovery, and protects subsurface property rights. All disposal wells inject fluids deep beneath any drinking water aquifers. North Slope Mitigation Measure A.4.j states

that the preferred method for disposal of muds and cuttings from oil and gas activities is by underground injection.

Great Bear's Plan states that waste drilling muds and cuttings will be trucked to the PBU G&I facility for processing and disposal as approved by AOGCC. Solid drilling waste may be placed in open-top metal tanks or shale bins. Waste liquid drilling fluids will be stored in closed tanks. The drilling waste can be pumped out of the tanks/bins and trucked directly off-site for disposal, or temporarily stored on-site in shale bins until frozen prior to disposal. Drilling waste will be transported as it is generated to the extent practicable. After the removal of drilling waste from the storage area, a visual site inspection will be performed to verify that all drilling wastes has been removed.

Accidental Spills:

Impacts resulting from accidental spills would depend on the type of product, the location, volume, season, and duration of the spill or leak, and the effectiveness of the cleanup response. Heavy equipment, such as trucks, tracked vehicles, and tank trucks, commonly use diesel fuel, gasoline, motor oil, hydraulic fluid, antifreeze, and other lubricants. Spills or leaks could result from accidents, improper refueling procedures, or from corrosion of lines. Under standard DNR permit conditions for off-road activity, secondary containment must be provided at fuel hazardous substance storage and transfer areas. A secondary containment or surface liner must be placed under all container or vehicle fuel tank inlet and outlet points, and appropriate spill response equipment must be on hand during any transfer or handling of fuel or hazardous substances.

Oil Spills:

The maximum extent of an oil spill during the Talitha A project is limited due to the short season and temporary nature of exploration programs. There are no production activities, permanent facilities, or pipelines proposed. Great Bear has proposed temporary activities during winter months, and the Division anticipates any future exploratory drilling would also take place during the winter when the risk from spills is lower.

Mitigation measures include siting facilities away from fish-bearing streams and lakes, development of oil spill contingency plans, and providing adequate spill response training. North Slope Mitigation Measures require that sites be protected from leaking or dripping fuel and hazardous substances; secondary containment be placed under all container or vehicle fuel tank inlet and outlet points, hose connections, and hose ends during fuel or hazardous substance transfers; vehicles cannot be refueled within the annual floodplain; containers must be marked with the contents and lessee/contractor name; waste from operations be reduced, reused, or recycled to the maximum extent practicable; muds and cuttings should be disposed of by underground injection, where practicable; and that proper disposal of garbage and putrescible waste be utilized.

Great Bear's North Slope Mitigation Measure Analysis states that fuel and hazardous substance containers with an aggregate storage capacity greater than 55 gallons will be stored at least 100 feet from any waterbody and at least 1,500 feet from current surface drinking water sources (A.4.b); drip pans or liners will be placed under parked vehicles or equipment to capture fluids (A.4.c); surface liners will be used under all potential spill points; adequate sorbents are on hand

during fuel transfers, and ensure that personnel are properly trained and understand proper procedures for handling flammable and combustible fluids (A.4.d); all containers with fuel or hazardous substances will be labeled with the contents and lessee's/contractor's name (A.4.f); and solid burnable waste may be incinerated on location. All waste generated as part of operations will be hauled off-site for disposal at an approved facility (A.4.h).

iii. Habitat, Fish, Wildlife and Subsistence:

1. Habitat:

Any exploration activity can impact habitat, fish, and wildlife. The North Slope Mitigation Measures are designed to minimize these impacts. The Plan activities will take place over a limited time and involve ice roads and temporary facilities. The Division anticipates impacts to habitat, fish, and wildlife will also be limited and temporary. The Division also anticipates that any future Plans for the exploration phase will involve similarly limited and temporary activities and impacts.

2. Fish:

Great Bear's Talitha A drill site is more than one-half mile from the Sagvanirktok River and more than 500 feet from any fish-bearing stream. The Sagvanirktok River is an anadromous stream, supporting the spawning and overwintering of several species of fish that then migrate to nearshore coastal waters to feed in the summer. Migration patterns vary by species and within species by life stage. The risks created as a result of exploration activities are expected to have minimal impacts on the Sagvanirktok River or any fish-bearing streams. Potential effects of exploration activities include degradation of stream banks and erosion, reduction of or damage to overwintering areas, impediments to migration, and fish kills due to oil spills.

A potential habitat impact at the exploration phase is erosion. Erosion results in siltation and sedimentation, which in turn may result in a reduced or altered stream flow that may affect overwintering habitat availability and the ability of fish to migrate upstream. Protecting the integrity of stream bank vegetation and minimizing erosion are important elements in preserving fish habitat. Streambeds could be affected if stream banks are altered from equipment crossings.

Withdrawal of water from lakes and ponds could affect fish overwintering habitat by entraining juvenile fish, lowering water levels, and increasing disturbance. The construction of ice roads across rivers and streams may also affect the ability of fish to reach overwintering areas by blocking movement and causing direct loss of overwintering habitat. Removal of water from lakes where fish overwinter may affect the viability of overwintering fish, and longer-term effects of lake drawdown may impede the ability of fish to return to the lake in subsequent years. Removal of snow from lakes may increase the freeze depth of the ice, kill overwintering and resident fish, and adversely affect the ability of fish to utilize the lake in future years.

North Slope Mitigation Measure A.2.b requires that removal of water from fish-bearing rivers, streams, and natural lakes have prior written approval by DMLW and ADF&G. Water

intake pipes used to remove water from fish-bearing waterbodies must be surrounded by a screened enclosure to prevent fish entrainment and impingement, with screen mesh size no greater than one mm (0.04 inches), unless another size is approved by ADF&G. The maximum water velocity at the surface of the screen enclosure may be no greater than 0.1 foot per second unless an alternative has been approved by ADF&G.

Before a permit to appropriate water is issued, DMLW considers local demand and may require applicants to conduct aquifer yield studies. Generally, water table declines associated with the upper unconfined aquifer can be best mitigated by industrial users tapping confined (lower) layers or searching for alternate water sources.

DNR DMLW Water Section issued TWUA A2020-105 on December 14, 2020, and Great Bear has submitted an application under TWUA A2020-112 for water withdrawal to support Great Bear's exploration drilling, and ice road and pad construction.

3. Wildlife:

Winter exploration-related disturbance is expected to have minor impacts on caribou, particularly large groups, with animals being briefly displaced from feeding and resting areas when vehicles pass nearby. Vehicle traffic associated with transportation corridors, such as the Dalton Highway, has the potential to affect habitat use. Acute disturbance effects may in combination result in a cumulative effect on habitat availability for those individuals with fidelity to the Kuparuk River calving area but may have little or no effect on the Central Arctic herd population. It is expected these disturbances would be short-term.

Moose are present across the North Slope, with the largest concentration along the Colville River and its tributaries. Moose generally remain in the foothills and along river corridors. Great Bear's proposed drilling program is expected to have little effect on the North Slope moose population.

The temporary displacement of some polar bears from preferred habitats may result from routine exploration activities such as the proposed Plan activities and activities Great Bear proposes throughout the exploration phase. Potential impacts to polar bears from exploration activities such as those proposed in the Plan include disruption of denning, attraction to areas of activity, vehicular traffic or noise, and adverse interaction with humans. Polar bears may be present in upland and offshore areas year-round. Polar bears continually search for food. Once bears find a camp or industrial site, they will often enter to explore and search for food. If a bear receives a food reward, then it is more likely to return. Polar bears often investigate not only things that smell or act like food, but also novel sights or odors. Subadult bears are more likely than well-fed bears to be food-stressed and attracted to human activity. Subadults are also less likely to leave if a potential food source is present. Attractants include kitchen odors, deliberate feeding, accessible garbage, sewage lagoons, carcasses, industrial materials, and alteration of habitat. Due to its proximity to existing transportation infrastructure and location inland, the Talitha A project is unlikely to significantly increase temporary displacement and disturbance above the level caused by existing transportation activities.

Brown bears can be found throughout the Arctic region in varying densities. The lowest densities occur along the coastal plain; brown bears are at the northern limits of their range in the Arctic. The availability of food is limited, and their reproductive potential is low. Brown bears may be subject to disturbance from oil and gas activity. During exploration, human activity may attract foraging bears, especially to refuse disposal areas. Omnivores are attracted to food and food odors associated with human activity and may become conditioned to non-natural food sources. This may pose a threat to human safety and the potential need to dispatch nuisance animals. Bears can also be displaced by human land use activities.

There are several regulations imposed by state, federal, and local agencies that are implemented to avoid, minimize, and mitigate these potential effects to bears. In addition to complying with the Endangered Species Act and the Marine Mammal Protection Act, Great Bear must comply with North Slope Mitigation Measures to minimize effects of exploration activities on bears.

Muskoxen are present throughout the North Slope and are mainly distributed along rivers such as the Sagvanirktok River and Colville River. Muskoxen are not adapted for digging through snow and seek areas with shallow snow to better access food. The proposed project is near muskoxen habitat and may minimally impact the muskoxen population.

There are several regulations imposed by state, federal, and local agencies that are implemented to avoid, minimize, and mitigate these potential effects to bears. In addition to complying with the Endangered Species Act and the Marine Mammal Protection Act, Great Bear must comply with mitigation measures to minimize effects of exploration activities on bears.

4. Subsistence:

Traditional subsistence uses in the area include: brown bear, caribou, musk ox, and moose harvesting; hunting and trapping of furbearers such as wolf, fox, weasel, wolverine, and squirrel; hunting migratory waterfowl and collecting their eggs; fishing for whitefish, char, salmon, smelt, grayling, trout, and burbot; and collecting berries, edible plants, and wood.

Potential exploration activities that could have effects on subsistence uses in the area include discharges from well drilling and ongoing disturbances from operation activities such as vehicle traffic. Noise, traffic disturbance, and oil spills generally produce short-term impacts on subsistence species.

The North Slope Areawide BIF contains several mitigation measures intended to reduce conflicts with subsistence, commercial, and sport harvest activities. Prior to submitting a Plan to the Division, the lessee must consult with affected subsistence communities and the NSB to discuss reasonably foreseeable effects on subsistence during the proposed operations, and methods of proposed operations and safeguards or mitigation measures that can be implemented to prevent unreasonable conflicts. The lessee must make reasonable efforts to ensure that the proposed exploration activities are compatible with subsistence hunting and fishing and will not result in unreasonable interference with subsistence harvests. The Division may implement restrictions, as appropriate, to reduce potential conflicts.

Great Bear states that throughout its years of activities in the project area, Great Bear has met with local leadership and communities and the NSB to collect input and inform how Great Bear's activities can be conducted in a manner that avoid conflicts and minimizes impacts to subsistence activities.

iv. Historic or archeological sites:

While exploring, Great Bear could encounter prehistoric, historic, or archaeological sites. AS 41.35.200 addresses unlawful acts concerning cultural and historical resources. In addition, all field-based response workers are required to adhere to historic properties protection policies that reinforce that it is unlawful to collect or disturb, remove, or destroy any historic property or suspected historic property, and to immediately report any historic property that they see or encounter.

Under NSBMC, proposed exploration shall not impact any historic, prehistoric, or archaeological resource before the assessment of that resource by a professional archaeologist (NSBMC 19.50.030(F)). NSBMC 19.70.050(F) states, "Development shall not significantly interfere with traditional activities at cultural or historic sites identified in the Coastal Management Program." These provisions give the NSB authority to protect cultural and historic resources and current subsistence uses of these sites.

North Slope Mitigation Measures require the lessee to conduct an inventory of prehistoric, historic, and archaeological sites within the area affected by an activity. The inventory must include consideration of literature provided by the NSB, nearby communities, Native organizations, and local residents; documentation of oral history regarding prehistoric and historic uses of such sites; evidence of consultation with the Alaska Heritage Resources Survey and the National Register of Historic Places; and site surveys. The inventory must also include a detailed analysis of the effects that might result from the activity. A cultural resources survey and inventory was conducted in the project area to identify any prehistoric, historic, or archaeological sites. Great Bear has obtained cultural clearances from the SHPO and NSB Cultural Resources Department on potential historical and archaeological resources. No sites are proposed that would impact cultural, historical or archaeological resources.

V. **CONSIDERATION OF UNIT PLAN OF OPERATIONS REQUIREMENTS UNDER 11 AAC 83.346(c-d) and 11 AAC 83.390**

A. **Full Payment of Damages to the Surface Owner 11 AAC 83.346(c)**

The State owns the surface and full payment of damages to the State are accomplished through the bond posted by the applicant discussed in subsection C below.

B. **Plan Sufficiency 11 AAC 83.346(d)**

A proposed plan must include statements, maps, or drawings setting forth

- (1) the sequence and schedule of operations;
- (2) the projected use requirements directly associated with the proposed operations;
- (3) plans for rehabilitation;

- (4) a description of operating procedures to prevent or minimize adverse effects on natural resources and concurrent uses of the area (11 AAC 83.346(d)).

The information in section IV. Proposed Operations, above, and additional information contained in Great Bear's proposed Plan satisfy the requirements for a plan under 11 AAC 83.346(d) and thus provide the Division with sufficient information available at this time to determine the surface use requirements and impacts directly associated with the proposed operations.

C. Oil and Gas Lease Bond 11 AAC 83.390

The State owns all the surface land where the proposed Plan activities will be located. The State owns all the mineral estate the Plan proposes to explore. For the State, a lessee provides for payment of damages by posting a bond, and remains liable for full damages under the lease. Great Bear has a Statewide Oil and Gas Bond in the amount of \$500,000 and continuing liability under the lease.

VI. CONSIDERATION 11 AAC 83.303 CRITERIA

A. Protection of Public Interest

The Division has considered the public interest, considering statutory provisions that provide for conserving natural resources through unitized development (11 AAC 83.303(a); AS 38.05.180(p)). The legislature has declared the public's interest in oil and gas development as an interest in developing oil and gas resources to maximize economic and physical recovery, maximize competition, and maximize use of Alaska's human resources (AS 38.05.180(a)(1)).

This Plan addresses the means for carrying out the Talitha A project which, as determined by TAU First Plan of Exploration, is necessary for maximizing recovery of the oil resources. Additionally, exploration under this Plan will contribute positively to the market by increasing overall oil production in the area.

The proposed Plan provides for use of Alaska's human resources by pledging to provide local employment and contracting opportunities and to encourage its contractors to do the same (see proposed Plan Mitigation Measure Analysis A.7a).

B. Conservation of Natural Resources

The Division has considered whether the Plan promotes conservation of all natural resources, including all or part of an oil or gas Plan, field, or area (11 AAC 83.303(a)(1)). Conservation, in this context, means maximizing the efficient recovery of oil and gas and minimizing the adverse impacts on the surface and other resources (11 AAC 83.395(1)). Exploration within a unit is intended to provide more efficient exploration than on the individual leases that make up the unit, and this Plan considers the exploration of the Unit, not single leases. Efficient exploration creates less impact on the land and promotes maximum use of all natural resources in the area, consistent with the public interest.

There are a number of ways in which the Plan seeks to minimize adverse impacts on natural resources. This Plan incorporates the mitigation measures set forth in the North Slope Areawide Oil and Gas Lease Sale Final Finding (North Slope Mitigation Measures). These mitigation measures include measures to protect habitat, fish, and wildlife, protect subsistence resources,

and limit the impact from fuel and hazardous substances. The Plan also includes operating procedures to prevent or minimize adverse effects, including effects on the environment, wildlife, and subsistence resources discussed in section IV.M of this decision.

C. Prevention of Economic and Physical Waste

The Division has considered whether the Plan promotes the prevention of economic and physical waste (11 AAC 83.303(a)(2)). Issues of economic and physical waste are carefully considered during Unitization and in the POE. This Plan conforms to the current POE on file with the Division's Units Section.

D. Protection of All Parties of Interest, Including the State

The Division has considered whether the Plan provides for the protection of all parties of interest, including the State (11 AAC 83.303(a)(3)). The parties of interest to a unit plan are the unit operator and working interest owners. The State has an economic interest in the oil and gas resources because it receives royalties from production. It is further in the State's best interest to encourage assessment of oil and gas resources, recognize the costs of exploring in varied geographic regions, and minimize the adverse impact of exploration, development, production, and transportation activity (AS 38.05.180(a)(2)).

Without approval of a Plan, Great Bear cannot develop Talitha A, and the State cannot recover royalties from that development. The Plan thus protects the Unit Operators, working interest owners', and the State's interests in exploring and developing the resources.

E. Environmental Costs and Benefits

The Division has considered the environmental costs and benefits of unitized development outlined in this Plan and through the POE and annual updates, on file with the Units Section (11 AAC 83.303(b)(1)); this Plan conforms to the current POE on file with the Division.

The North Slope Mitigation Measures, incorporated into this Plan by amendment, include measures to protect habitat, fish, and wildlife (North Slope Areawide Final Finding at sections 7-4). Additional operating procedures designed to minimize adverse effects on other natural resources and other uses of the unit area and adjacent areas are discussed in section IV.M of this decision.

F. Geological and Engineering Characteristics of Hydrocarbons

DNR previously considered the geological and engineering characteristics of a potential hydrocarbon accumulation or reservoir when it approved the unit agreement (11 AAC 83.303(b)(2)); this Plan conforms to the current POE on file with the Division's Units Section.

G. Prior Exploration Activities

The Division has considered prior exploration activities in the Plan area pursuant to 11 AAC 83.303(b)(3).

The TAU area has been part of scattered exploration efforts since the 1960s, and remains lightly explored, despite its proximity to the Dalton Highway and Trans-Alaska Pipeline. The only well

drilled in the TAU is the Pipeline State 1 well, which was drilled in 1988 by the Atlantic Richfield Company (“ARCO”).

During the 2012 through 2016 winter seismic acquisition, Great Bear acquired five new proprietary 3D surveys covering approximately 1,000 square miles near the TAU. The 2012 Great Bear/Alcor, 2013 Dalton, and 2014 Great Bear/Niksik 3D surveys are the most relevant to the TAU. Great Bear used these seismic surveys to map depth of structure, fault patterns, and amplitude anomalies associated with potential reservoirs.

Great Bear drilled the Alcor 1, Merak 1, and Alkaid 1 exploration wells northeast of the TAU in June of 2012, August of 2012, and February of 2015, respectively. Comprehensive logging suites were acquired in the wells, with conventional core collected from multiple targets in each well. A flow test was performed in the Alkaid 1 well in 2019.

Based on the acquired geophysical surveys and subsurface data collected during the drilling of the aforementioned wells near the TAU, Great Bear has identified the potential of the Brookian and Kuparuk C reservoirs in the TAU. The Brookian reservoir has become the focus of much of the recent exploration activity on the North Slope in recent years, while the Kuparuk C reservoir has a long history of production from numerous fields on the North Slope.

H. Plan of Exploration

The Division has considered the plans for exploration set forth in and approved by DNR in the POE (11 AAC 83.303(b)(4)). The POE was approved on November 12, 2020, to carry out operations in the proposed Plan.

I. Economic Costs and Benefits to the State

The Division has considered the economic costs and benefits to the State (11 AAC 83.303(b)(5)). Without approval of a plan, Great Bear will be unable to proceed with exploring Talitha A, which will cost the State the economic benefit of the royalties, as well as other economic benefits that flow from production.

J. Other Relevant Factors to Protect the Public Interest

The Division has considered other relevant factors necessary or advisable to protect the public interest (11 AAC 83.303(b)(6)). These other factors consist of the mitigation measures (section IV.M of this document) that will apply to this Plan; and the necessity to obtain other permits and approvals by different Agencies and landowners.

VII. CONSULTATION WITH OTHER GOVERNMENT ENTITIES

In reviewing the proposed Plan, the Division considered the fact that Great Bear may require approvals from Agencies for other elements of its project. Although mentioned in the Plan and above, these aspects of the project are not operations being approved by this decision and the Division offers no opinion on whether an agency should or should not approve these activities.

In addition to considering the approvals required by Agencies as they relate to this decision, the Division provided an agency review and comment opportunity for the activities proposed for

authorization under this decision. The following government entities were notified on November 3, 2020, for comment on the Plan: USACE, SPCO, ADF&G, DEC, DOT, DMLW, USFWS, and NSB. The comment deadline was 4:30 pm Alaska time on 12/17/2020. No Agency comments were received. The Plan was then publicly noticed.

VIII. PUBLIC NOTICE

Public notice of the Plan and opportunity to comment, per AS 38.05.035, was posted on the State of Alaska's online public notice web site, DNR's web site, and faxes of the public notice were sent to the Nuiqsut, Deadhorse, and Utqiagvik post offices on November 23, 2020. Additionally, public notice was published in the Alaska Dispatch News on November 23, 2020 and November 30, 2020, and the Arctic Sounder on November 26, 2020 and December 3, 2020. The deadline for comments was December 23, 2020, at 4:30 pm Alaska time. No comments were received.

IX. CONDITIONS OF APPROVAL

Having considered the proposed project, the Division approves the Plan as amended and modified by this decision and subject to the below conditions of approval:

To protect the State's interest, the Division finds that it is necessary to amend the Plan to incorporate the following Conditions of Approval:

- a) The applicant shall defend, indemnify and hold the State of Alaska harmless from and against any and all claims, damages, suits, losses, liabilities and expenses for injury to or death of persons and damage to or loss of property arising out of or in connection with the entry on and use of State lands authorized under this approval by the applicant, its contractors, subcontractors and their employees.
- b) The applicant shall inform and ensure compliance with any and all conditions of this approval by its employees, agents and contractors, including subcontractors at any level.
- c) Unless pre-authorized by a general permit, amendments and modifications to this approval require advance notice and must be approved in writing by the DNR.
- d) The Commissioner of the DNR may require that an authorized representative be on-site during any operations and close-out activities conducted under this approval. This stipulation is required to ensure that DNR meet its statutory responsibilities for monitoring activities taking place on State-owned lands. During and after close-out activities, the applicant shall provide suitable transportation for agency inspection.
- e) A status report for the activities conducted under this approval must be filed with this office on May 1 and November 1 each year, from the date this approval is issued and until a final completion report is filed with the Division. If a lessee requests an assignment, a status report must also be submitted during the assignment process. Failure to file in a timely manner may result in revocation of this approval.
 - a. Each status report shall include a statement describing and map(s) depicting all operations actually conducted on the leased area as of the date the report is prepared, which includes the location, design and completion status of well sites, material sites, water supplies, solid waste sites, buildings, roads, utilities, airstrips, and all other facilities and equipment installed.

- b. Upon completion of operations, the applicant will submit a completion report which will include all information required of a status report described in (a) above as well as a statement indicating the date of operations completion, any noncompliance with the terms of this plan approval of which a reasonable lessee would have knowledge of, clean-up activities conducted, the method of debris disposal, and a narrative description of known incidents of surface damage.
- f) Notification. The applicant shall notify the DNR of all spills that must be reported under 18 AAC 75.300 under timelines of 18 AAC 75.300. All fires and explosions must be reported to DNR immediately. The DNR 24-hour spill report number is (907) 451-2678; the fax number is (907) 451-2751. The Department of Environmental Conservation (DEC) oil spill report number is (800) 478-9300. DNR and DEC shall be supplied with all follow-up incident reports.
- g) A certified As-Built survey of the improvement shall be provided within one year of placement of the improvement. This As-Built must be submitted in both electronic and physical format.


X. FINDINGS AND DECISION

Having considered the specific activities proposed and the foregoing discussion of issues and conditions of approval, the Division makes the following findings:

1. The Plan provides sufficient information, based on reasonably available data, for the Division to determine the surface use requirements and impacts directly associated with the proposed operations.
2. The Plan includes statements, maps, or drawings setting forth the sequence and schedule of operations, projected use requirements, description of operating procedures, and a plan of rehabilitation designed to prevent or minimize adverse effects.
3. To protect the State's interest and mitigate potential adverse social and environmental effects associated with the Plan, the Division finds it necessary to amend the Plan to incorporate the mitigation measures set forth in the North Slope Areawide Oil and Gas Lease Sale Final Finding.
4. All oil and gas activities conducted under oil and gas leases are subject to numerous local, state, and federal laws and regulations with which Great Bear is expected to comply.
5. The people of Alaska have an interest in developing the state's oil and gas resources and maximizing the economic and physical recovery of those resources. AS 38.05.180(a).
6. Alaska's economy depends heavily on revenues related to oil and gas production and government spending resulting from those revenues. The related revenue sources include bonus payments, rentals, royalties, production taxes, income taxes, and oil and gas property taxes.
7. The potential benefits of approving this Plan outweigh the possible adverse effects, which have been minimized through imposition of mitigation measures, conditions of approval, and project-specific stipulations, and thus approval of this Plan as modified is in the State's best interest.

Based upon the Plan, supporting information provided by the applicant and the Division's review, determination of applicable statutes and regulations, consultation with other agencies, relevant entities and individuals, public comment, and the above findings related to that Plan, the Division hereby approves the Plan as modified.

Sincerely,

DocuSigned by:

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12/28/2020

Graham Smith
Permitting Section Manager
Division of Oil and Gas

Date

Appeal

A person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of “issuance” of this decision, as defined in 11 AAC 02.040(c) and (d) and may be mailed or delivered to the Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska 99501; faxed to 1-907-269-8918, or sent by emailed to dnr.appeals@alaska.gov. Under 11 AAC 02.030, appeals and requests for reconsideration filed under 11 AAC 02 must be accompanied by the fee established in 11 AAC 05.160(d)(1)(F), which has been set at \$200 under the provisions of 11 AAC 05.160 (a) and (b).

This decision takes effect immediately. If no appeal is filed by the appeal deadline, this decision becomes a final administrative order and decision of the department on the 31st calendar day after issuance. An eligible person must first appeal this decision in accordance with 11 AAC 02 before appealing this decision to Superior Court. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources.

Attachments: Appendix A: Maps and Figures 1-3
2008 North Slope Mitigation Measures

ecc: DOG: Graham Smith, James Hyun, Ashley Ethridge, Mark Henspeter, Jacob Rowland,
Ryan King and SPCO Records
DMLW: Northern Region Office and Henry Brooks
ADF&G: Maria Wessel
ADEC: Laurie Silfven and DEC Water Oil and Gas
USFWS: Charleen Buncic
NSB: Mabel Kaleak, Lilly Kilapsuk, Darylynn Aveoganna, Ralph Burke, and Price
Leavitt
AKDOT: Caitlin Frye
Other: USACE

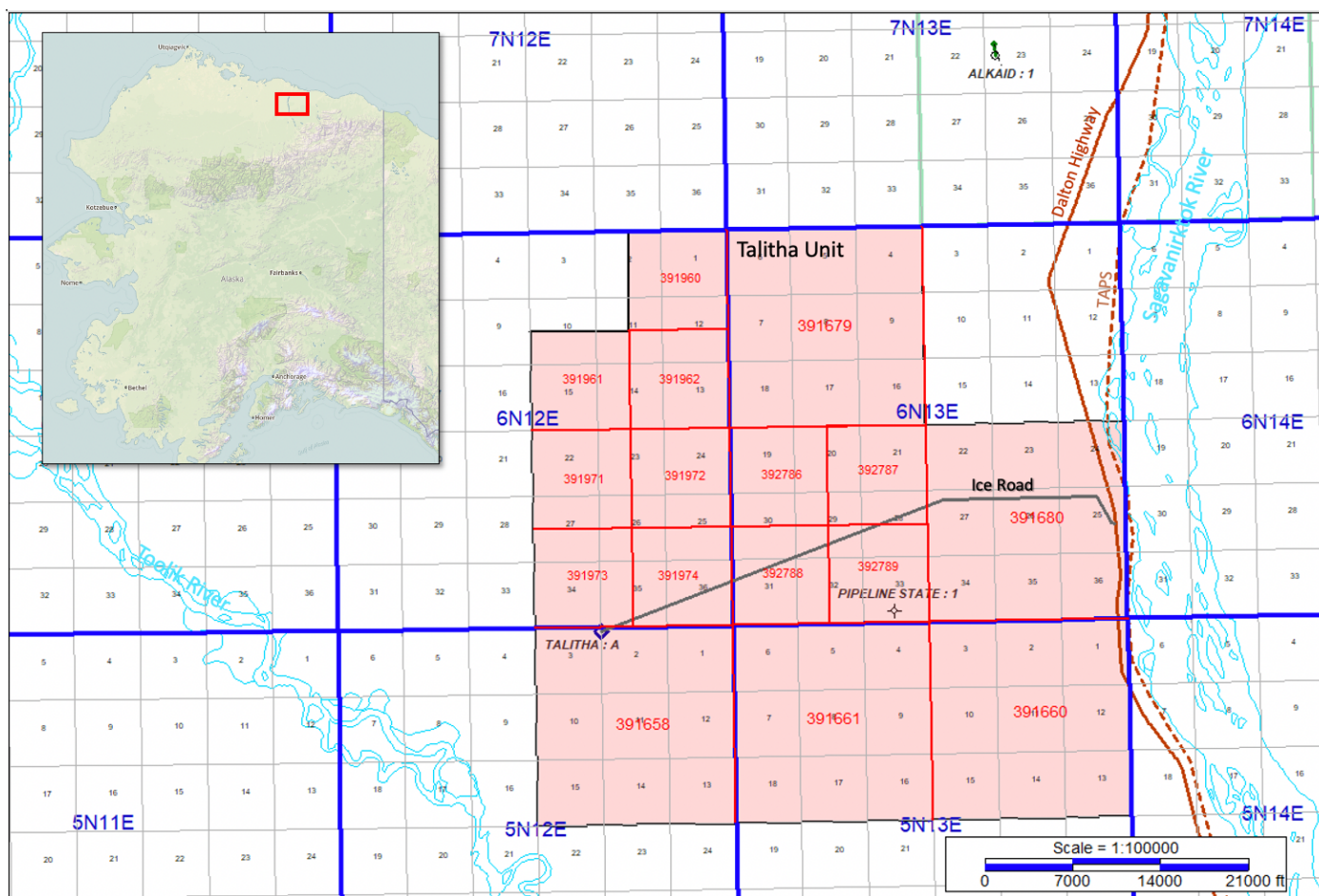


Figure 1.

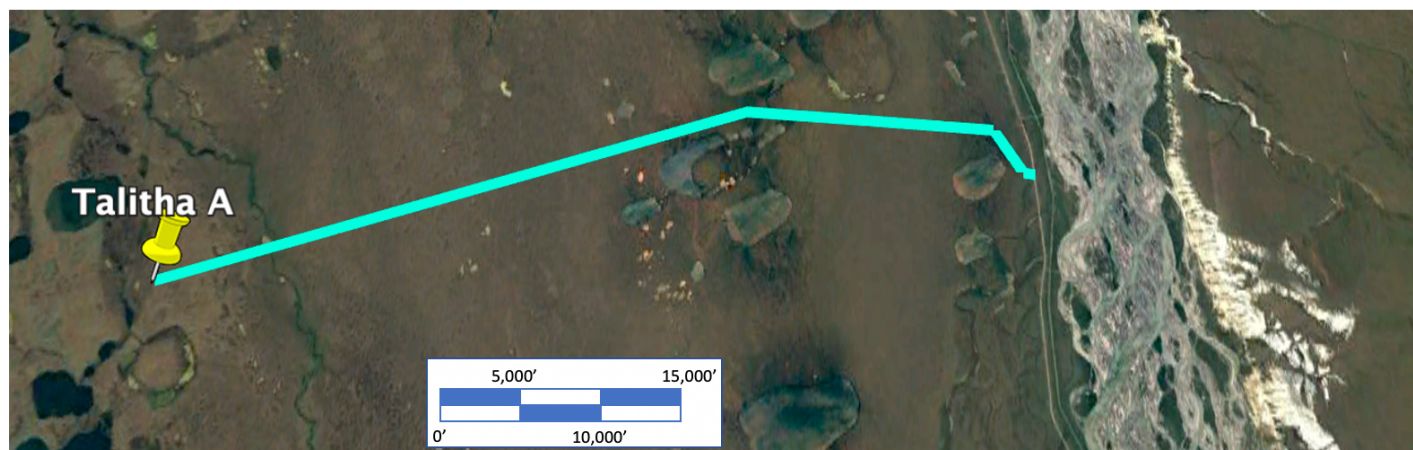


Figure 2.

PLAN
NORTH

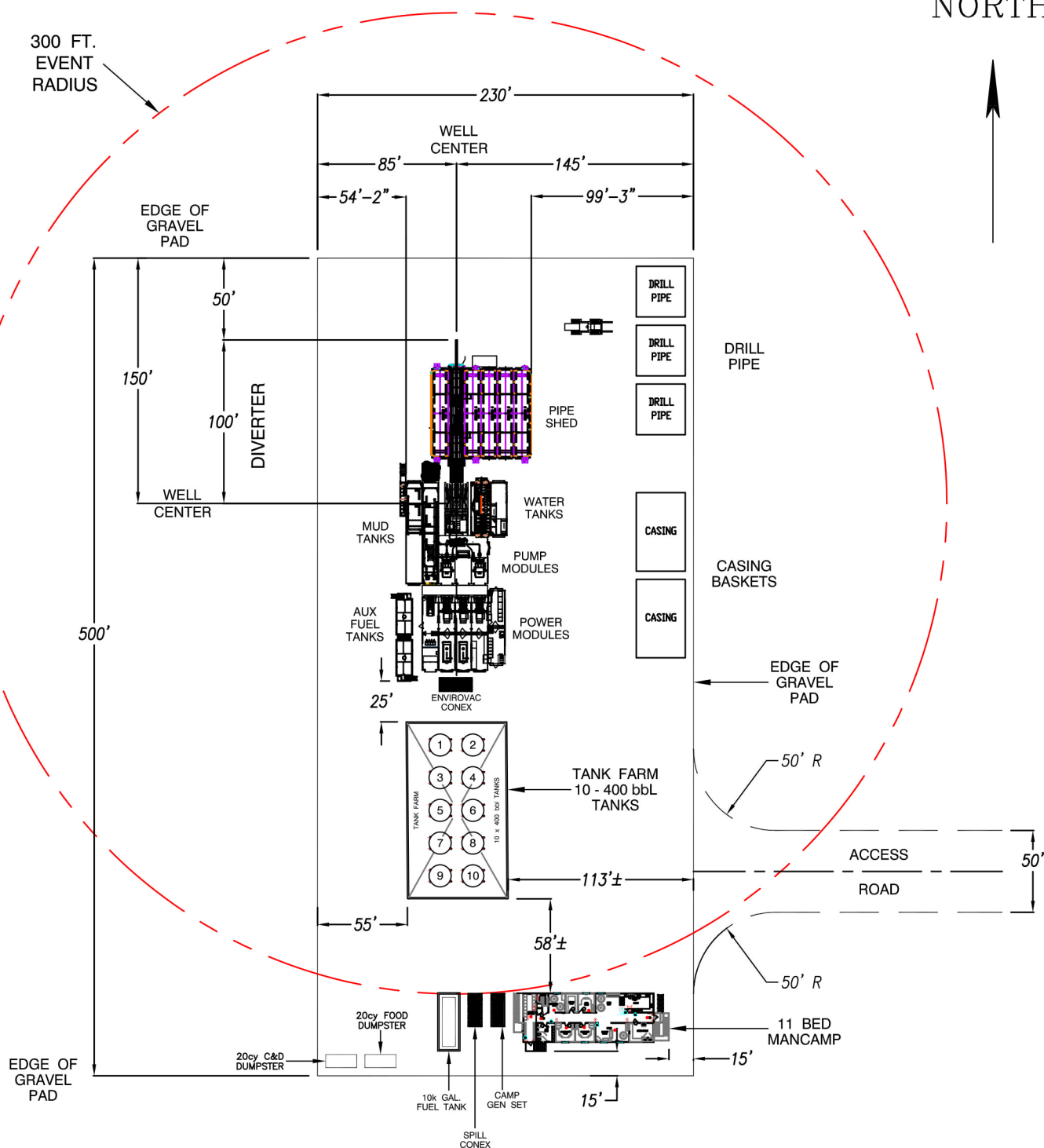


Figure 3.

230 ft. x 500 ft. Gravel Pad
115,000 sf = 2.64 Acres



Single Well Conceptual Pad
Drilling Operations
Nabors Rig 105AC

Great Bear Petroleum LLC
Conceptual Drilling Site
-

Issue Date: March 2020

Drawn By: -

Revision: B
Date: 6 MARCH 2020

Sheet 1 of 1

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75 25 50 Feet